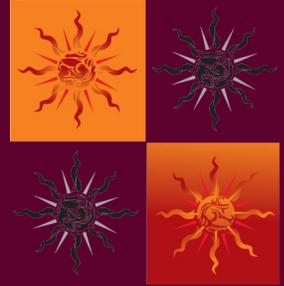




The Four Peaks Post



Fall 2012

National Weather Service — Phoenix, AZ

Fall Edition of The Four Peaks Post Newsletter!

By Charlotte Dewey, Meteorologist Intern

Fall has officially begun in the desert Southwest according to the calendar. While temperatures gradually cool down, leaving those triple digit days in the Summer, focus shifts towards transition weather events, taking a look back at the Monsoon as a whole and what is to come in the next few months as Winter approaches.

We look forward to many more newsletters coming out with great information that will hopefully be helpful and informative.

Inside this issue:

- Social Media
- Climate Corner
- Wx Story Highlight
- Monsoon 2012 Look Back
- SAWS V coming soon
- Dust Events of Monsoon

Office Leadership

Meteorologist in Charge

Gary Woodall

Warning Coordination Meteorologist

Ken Waters

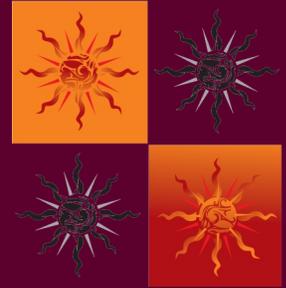
Science and Operations Officer

Doug Green

Questions: w-
psr.webmaster@noaa.gov



Image credit Arizona Highways Magazine 2001



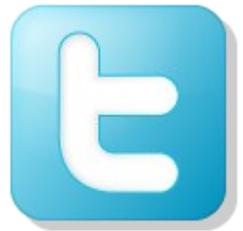
Summer for Social Media

By Jessica Nolte, Meteorologist/Social Program Manager

First off, are you on Facebook and/or Twitter? Have you “liked” or “followed” the NWS Phoenix yet?



If not, stop by our Facebook page at: <https://www.facebook.com/US.NationalWeatherService.Phoenix.gov> AND Twitter page at: <https://twitter.com/NWSPhoenix> Office Handle: @NWSPhoenix to connect with us!



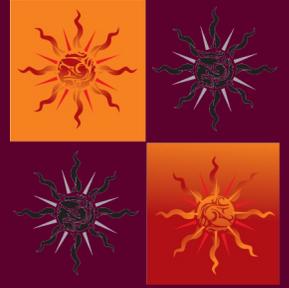
I’ll be bold & call it: alongside of our several active storm days, this summer was a summer for social media in our office. Last summer we were just trying out all the new bells & whistles on our newly upgraded to Dual-Pol Phoenix weather radar. This summer we were posting & tweeting about storms we were waiting for or watching on that “upgraded” weather radar scope.

Now, some people may ask – well, what is social media? There are a variety of definitions out there & some of you may be familiar with the concept already. One general

definition states it as web-based/mobile based technologies (read apps, programs or tools) that allow for communication to become interactive between organizations, communities, & individuals where the activity is driven by the creation & exchange of *user-generated content*. That is where the social part comes in. Everything on these networks is driven by the users! Instead of just going to your favorite news website & reading what they have posted on the pages, the content on social media networks is largely generated by people like me & you!

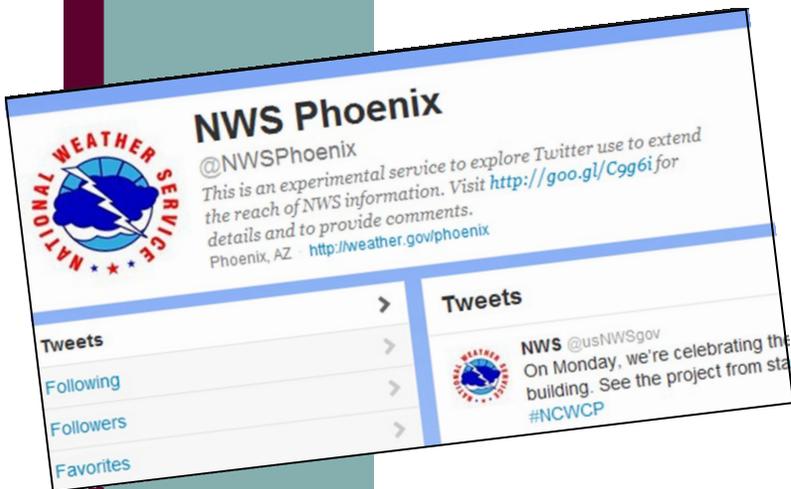


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Social Media (Continued)

Here is a rundown of the history of our office's presence out on two of the largest social media networks:



- NWS Phoenix joined Facebook April 2011
- We hit over 1,000 fans on our page June 20th, just after the start of the 2012 Monsoon
- We now have over 1,300 fans this October
- Our first ever "tweet" went live the morning of June 10th, 2012

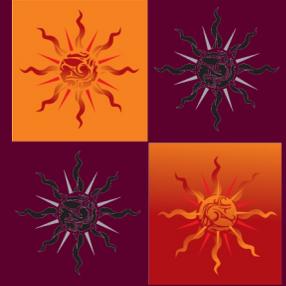
pushing (if not already over) the 600 followers mark

- Our most popular posts this Summer (on both networks) included sharing our Weather Story graphics about periods of increased storminess, posts about record temperatures & posts soliciting/sharing ground truth from our fans/followers about conditions they experienced during one of our many storm days across central AZ & southeast CA

central AZ & southeast CA

This is a new & exciting avenue the National Weather Service & local forecast offices are heading down. Connecting socially with our users is a dynamic way to rapidly exchange information & receive ground truth. We hope you join us in the social conversation!



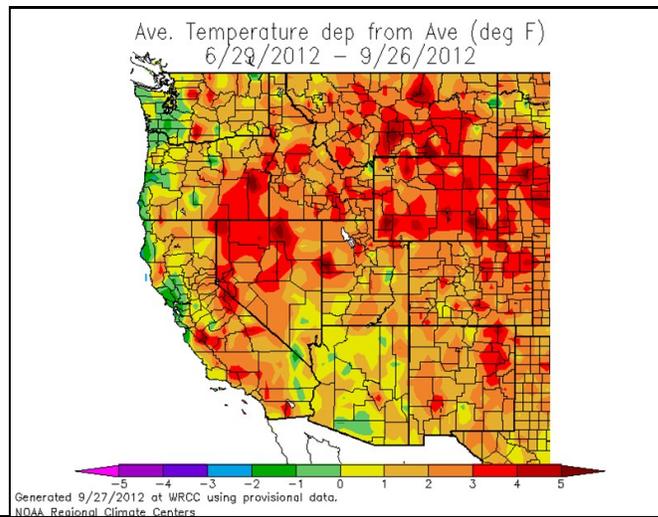


Southwest Climate Corner

By Mark O'Malley, Forecaster/Climate Science Program Manager

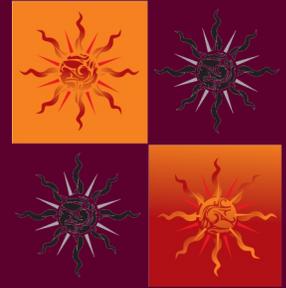
Monsoon season 2012 (June 15-Sept 30) has come to a close; and for a large number of communities across Arizona and southeast California, this season was one of the more active seasons of recent memory. Numerous days of thunderstorms, dust storms, high winds, and flooding rainfall were experienced. The active season did help alleviate drought conditions, which has plagued the area for the past year.

When averaged over the entire summer season, temperatures across the region were slightly above normal (normals are calculated during the 1981-2010 period). However, there were periods during the summer of excessive heat; particularly the latter half of June and the first 2 weeks of August where afternoon highs typically reached or exceeded 110 degrees over the low elevation desert locations.



City	June 2012 Avg Temp	July 2012 Avg Temp	Aug 2012 Avg Temp	Sept 2012 Avg Temp	Monsoon Average
Phoenix	93.8 (+2.9)	93.9 (-0.9)	95.3 (+1.7)	88.6 (+0.2)	92.9 (+1.0)
Yuma	90.4 (+1.4)	93.0 (-1.5)	95.3 (+1.0)	90.7 (+1.7)	92.4 (+0.7)
Tucson	87.8 (+3.0)	85.7 (-1.3)	88.2 (+2.9)	82.1 (+0.5)	86.0 (+1.3)
Flagstaff	63.7 (+3.8)	66.3 (+0.2)	66.0 (+1.8)	58.9 (+1.5)	63.7 (+1.8)

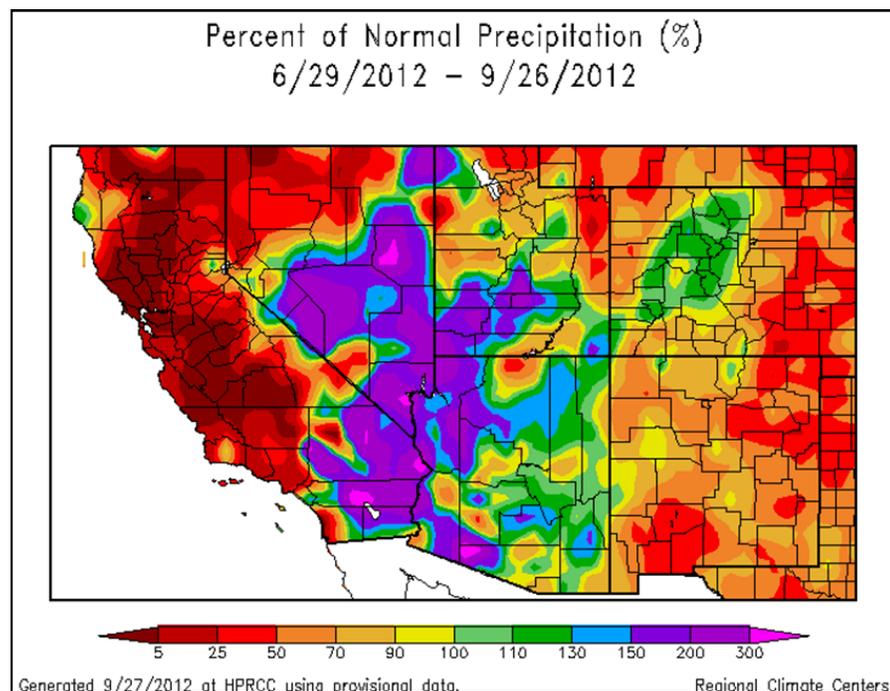
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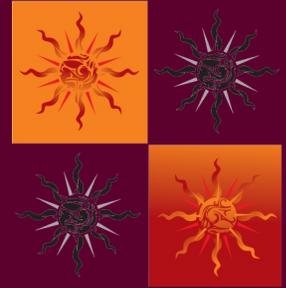
Climate Corner (Continued)

Precipitation totals for the Monsoon varied across the region, with the most anomalously high accumulations over southeast California and far western Arizona. Departures from average were spotty over the remainder of Arizona with lower amounts over the eastern parts of the state, though when averaged over a larger area, rainfall totals this summer season were slightly above average for the state of Arizona.

City	June 2012 Precip	July 2012 Precip	Aug 2012 Precip	Sept 2012 Precip	Monsoon Precip
Phoenix	0.00 (-0.02)	0.96 (-0.09)	1.45 (+0.45)	0.59 (-0.05)	3.00 (+0.29)
Yuma	0.00 (-0.01)	1.82 (+1.53)	0.12 (-0.35)	0.31 (-0.22)	2.25 (+0.27)
Tucson	0.34 (+0.14)	4.13 (+1.88)	1.17 (-1.22)	0.38 (-0.91)	6.02 (-0.55)
Flagstaff	0.00 (-0.36)	3.45 (+0.84)	2.59 (-0.52)	0.26 (-2.12)	6.30 (-2.02)



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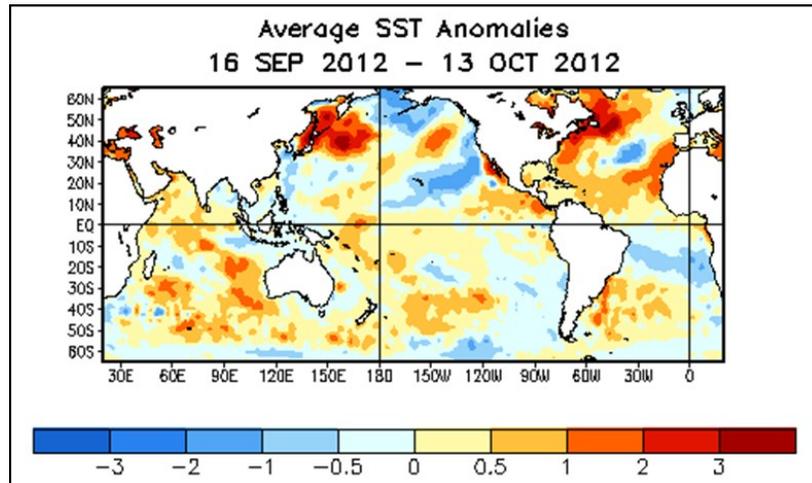
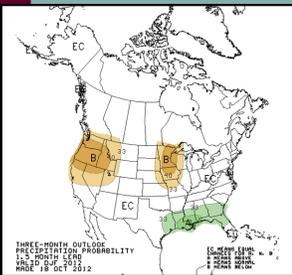
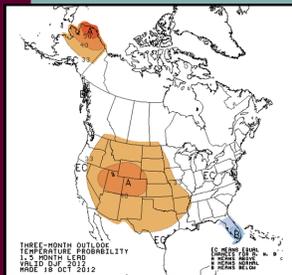


Climate Corner (Continued)

What's on the climate forecast horizon?

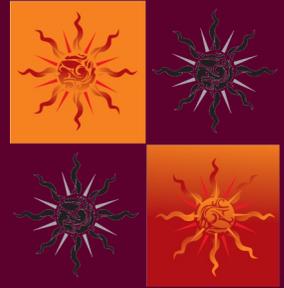
Water temperatures over the eastern equatorial Pacific have warmed substantially since the spring months; so much so, that conditions briefly appeared to be entering a weak El Nino phase this autumn. However, in the past several weeks, this warming phase has deteriorated; and only near average to slightly above average water temperatures remain over the equatorial Pacific. At this time, it appears the upcoming winter season will be characterized by neutral to very weak El Nino conditions. Regardless, even weak El Nino phases reveal little information on the upcoming winter weather over the southwestern US. Some weak El Nino years provide ample precipitation, while others remain very dry. Typically, shorter term weather pattern and climate oscillations will overwhelm any influence of the weak El Nino signal. Therefore, there are very little reliable climate signals giving clues to the upcoming winter season.

With little to no El Nino influence expected this winter, the official Climate Prediction Center probabilistic outlook for the winter season (Dec-Jan-Feb) calls for slightly better chances for above average temperatures. There is also near equal chances for above, below, or near normal precipitation across the Desert Southwest.



The average winter season (Nov-Feb) precipitation totals are given below, along with accumulations from the past 5 seasons.

City	Average Nov-Feb Rainfall	2011-12	2010-11	2009-10	2008-09	2007-08
Phoenix	3.36	1.91	1.78	4.27	2.93	4.31
Yuma	1.49	1.60	0.73	2.88	3.38	0.37
Tucson	3.30	3.22	0.71	4.42	2.46	2.95
Flagstaff	7.84	5.33	8.50	11.14	7.67	12.22



Summer in Graphics

By Jessica Nolte, Meteorologist/Social Media Program Manager

& Charlotte Dewey, Meteorologist Intern

Weather Story's are a graphical representation of upcoming expected weather hazards and impacts to our area. The design can vary by the use of impact based photos from severe weather events, storm chasing photos, specific weather hazards or meteorological weather maps. The basic idea is to create an image that can be understood and interpreted by almost anyone and everyone getting the point across.

Here's a look at some of the notable Weather Story's the Phoenix office issued this summer, highlighting impacts such as: Hot/near record temperatures; Safety during severe weather; Changing weather conditions; Chances for storms; Heavy rain and flooding; Location of weather systems.

More Flooding Possible Sunday

Turn Around...Don't Drown

- Flash floods are the #1 thunderstorm-related killer
- Most flash flood deaths occur in vehicles
- Moving water 2-3 feet deep will carry away most vehicles
- Keep children away from creeks and washes when heavy rain is in the area
- Be especially careful at night when water depth and road conditions are harder to see

Photo: Thunderstorm, NOAA

Increased Monsoon Moisture this Week... with an Increasing Chance of Afternoon and Evening Thunderstorms

Tonight through Wednesday Map

Monsoon moisture will continue to increase into the weekend...for a chance of showers and thunderstorms each afternoon and evening. Intensity and coverage of thunderstorms will vary daily across the mountains and deserts.

Forecast/Impacts:

- Brief Heavy Rain
- Localized Flooding
- Strong Gusty winds and Blowing Dust.
- Frequent Lightning.

Photo: Humid

...Weekend Outlook...

Excessive Heat to Increasing Chances of Showers and Thunderstorms

- Will show normal temperatures Thursday/Friday
- Drift plenty of water and take frequent breaks!
- Schedule outdoor activities as early in the day as possible.
- Moisture will begin to move in from the south/southeast
- Early Weekend Storm Threats: Dry Lightning/Sooty Winds
- Late Weekend Storm Threats: Potentially Heavy Rainfall

...Weekend Outlook...

Impacts

Gusty winds and blowing dust
Lightning with thunderstorms
Possible periods of brief heavy rain

Remember: Safety First!

Pull Aside, Stay Alive *When Thunder Roars, Go Indoors* *Turn Around, Don't Drown*

Photo: Thunderstorm, NOAA

Isolated Showers & Cooler Temps Today

- Below normal temperatures to continue this weekend, gradually rising through the week
- Slight chances for showers this evening North & East of Phoenix

Concerns with Storms:

- Heavy rain
- Flooding
- Gusty winds

"Turn Around, Don't Drown"

Photo: Thunderstorm, NOAA

Near Record Temperatures in Phoenix

Forecast	TUE	WED	THU	FRI	SAT	SUN
High	112	112	110	112	112	112
Record High	112	113	112	116	113	114
	1905	1991	2003	2003	1962	2007

- Excessive Heat Warning through Wednesday for the Valley
- Another Excessive Heat Warning may be needed Friday through Sunday

Stay indoors if possible...wear light weight and loose-fitting clothing...drink plenty of water...check on children, elderly, and pets

Upswing In Thunderstorm Chances

A moist monsoon flow pattern is expected to develop this week.

Anticipate blowing dust to affect the central AZ deserts Monday.

Precipitation chances expand to the north and west Tuesday and Wednesday.

Expect cooler high temperatures Tue and Wed due to more humidity and cloudiness.

Photo: Thunderstorm, NOAA

Continued chance of showers and thunderstorms today

Storms possible from El Centro, CA to Globe, AZ this afternoon

- Storm chances will remain elevated today

Impacts:

- Slow moving storms: Locally heavy rain and flooding possible
- Strong winds/lightning

Photo: Monday satellite image (atmospheric moisture)

Low Grade Monsoon Next Couple Days

Storm Chances Increase This Weekend

Las Vegas

Moisture Progression

Friday

Today & Thursday

Saturday & Sunday

Phoenix

Tucson

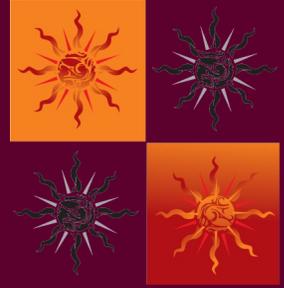
Will

Today & Thursday Storm chances will be limited to Eastern AZ

Friday through Early Next Week Moisture will be on the increase from east to west

Spread of Storm chances

- Lower deserts of Arizona on Saturday and Sunday
- Into Southeast California Monday and Tuesday



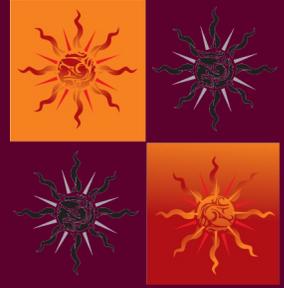
SAWS V: Coming Summer 2013

By Jessica Nolte, Meteorologist/Aviation Program Manager

After a successful SAWS IV (Southwest Aviation Weather Safety) workshop hosted by the NWS and Center Weather Service Unit (CWSU) Albuquerque, New Mexico offices, the host torch has passed to the NWS & CWSU offices of Southern California, Los Angeles and Palmdale. Planning for the fifth edition of the SAWS workshop is underway and more details will be available in the near future. The target dates are the middle of June, possibly around the 20th in Long Beach, California. We are looking forward to carrying on the tradition of bringing aviation users and aviation weather service providers together from across, but not limited to, the Southwest and West Coast regions. Once more information is available we will post it on our office homepage. Hope to see you June next year in So Cal!



Image credit to Research and Innovative Technology Administration and Bureau of Transportation Services (www.bts.gov)



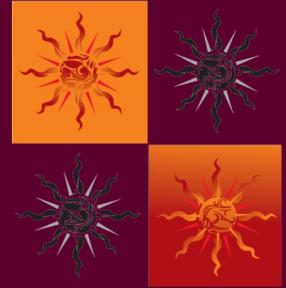
Monsoon 2012: A Look Back

By Dan Leins, Senior Forecaster

The 2012 Monsoon featured a handful of noteworthy events across the region, but never really featured “The Big One”. Most days saw less than 4 Severe Thunderstorm Warnings issued, and our office only issued a total of 52 Severe Thunderstorm Warnings during the Monsoon months (June 15—September 30). Normally, we issue close to 80 warnings during the Monsoon. Does that mean the entire monsoon was a dud? Not entirely.

Severe weather affected southeast California and extreme western Arizona during the afternoon/evening hours of 13 July. A few weeks later, scattered showers and thunderstorms moved through the east valley of the Phoenix metro area on 29 July, producing downed trees near San Tan Valley. During the evening of 20 August, very strong storms moved through the east valley again, producing widespread damage near the Chandler Fashion Center, Superstition Springs Mall, and other locations in east Mesa. Two few weeks later on 9 September, another round of storms moved through southwest Arizona and southeast California, with winds measured around 65 mph in and around Yuma. Normally we usually have at least one event per summer with dozens of storm damage reports, but that wasn’t the case this summer.

We did, however, see quite a bit of rain and consequently, dealt with quite a bit of flooding during the 2012 Monsoon. Again, 13 July saw severe weather across southeast California and southwest Arizona, but also produced quite a bit of flooding in western Imperial County. The next day, parts of the east valley saw extremely heavy rain, with some spots in Gilbert receiving over 2 inches of rain in under an hour. Of course, the biggest rain event of the year occurred near Anthem during the afternoon of 31 July. Over 5 inches of rain fell in approximately an hour and caused substantial property damage, and in at least one case, life-threatening flash flooding. This was an extremely rare event, possibly a 1 in 500 year event according to historical records. Fast forward to the evening of 22 August when almost the entire Phoenix metro area saw moderate rainfall. Sky Harbor Airport saw its greatest daily rainfall of the season at 0.80 inches, and this was the highest Monsoon total since July 2010. Also, Indian Bend Wash saw its highest flow since January 2010 during this event, and its highest Monsoon flow since 2008. Sky Harbor ended up receiving 3.00” of rain during the Monsoon, whereas the normal Monsoon precip is 2.71”.



A Dusty Monsoon

By Charlotte Dewey, Meteorologist Intern

As the 2012 Monsoon ends, we take a look back at the notable Dust Storms from the summer. Dust storms have gained more attention and seem to have larger areas of impact than some may think. The fact that the areal coverage, distance traveled and intensity can hold together for such a long amount of time is incredible. So, how did the 2012 Monsoon look for Dust Storms?

Incorporating warnings issued throughout 2012 as a whole, not just during the Monsoon, the National Weather Service (NWS) as an office issued 17 Dust Storm warnings. This spans our entire County Warning Area (CWA) including Southeast California. When a Dust Storm Warning is issued, criteria of 1/4 mile visibility or less is required. Spotter reports from the public, law enforcement and trained spotters greatly help to verify ground truth of visibility during severe weather events, and at times, is the only way to know how low the visibility is. The number of local storm reports (LSR) received for 2012 for dust storm criteria (visibility of 1/4 mile or less) so far has been 60. The correlation between how severe a dust storm is compared with how many reports and the lowest visibility in a report is hard to connect. Some events that span a large area, both in areal coverage of a warning and the area that the dust travels, may only have a few LSR's associated with them. On the other hand, some short lived dust storms, both in time duration and areal coverage may have numerous reports associated with it. To classify the biggest, longest time duration, and largest areal coverage for dust storms is tough, and subjective.

During 2012, 17 Dust Storm Warnings were issued, with 16 days that dust storms were reported, across the entire CWA. 14 of those days occurred during the Monsoon. Defining one dust storm from another is tricky, especially if the same dust storm impacts multiple areas. Individual days that had dust storms reported were as follows (including non-Monsoon days): Feb 27, May 9, Jun 16, Jun 27, Jul 21 (two on this day), Jul 22, Jul 23, Jul 28, Jul 29, Jul 31, Aug 5, Aug 11, Aug 13, Sep 2, Sep 6, Sep 9.

Parameter	Location			
	Pinal Co.	PHX Metro/ South PHX & East Valley	West Valley	Yuma/Southeast California
Number of days with Dust Storms	9 days	9 days	5 days	2 days
Dates of Dust Storms (including non- Monsoon)	(May 9) Jun 16, Jun 27, Jul 21, Jul 22, Jul 31, Aug 11, Sep 2, Sep 6	(Feb 27, May 9) Jun 16, Jun 27, Jul 21, Jul 23, Aug 5, Aug 11, Sep 6	Jun 16, Jul 28, Jul 29, Sep 6, Sep 9	Jul 21, Aug 13